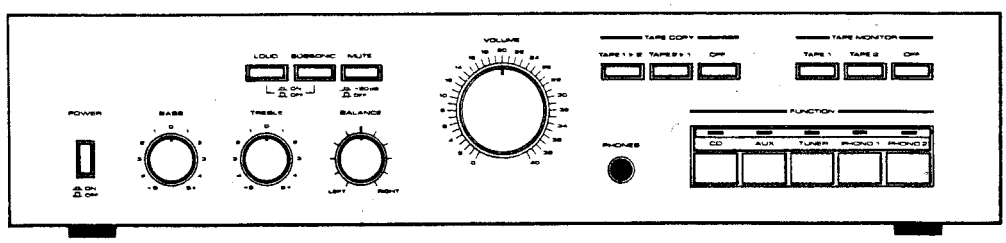
PA 3202

Service Manual

MODELS

LA1000 STEREO PREAMPLIFIER



LA 1000 STEREO PREAMPLIFIER

SPECIFICATIONS

Amplifier Section

Continous Max. Output Voltage is 8 Volts Per Channel, Min.. at 47 Kohms from 20Hz to 20kHz with no more than 0.02% totaharmonic distortion.

- Input (Sensitivity/Impedance)
  Phono 1, 2 ..... 2.5mV/47KΩ
  Tuner, Aux,CD, Tape 1, 2 Play 150mV/47KΩ
- Phono Overload Level (T.H.D. 0.05%, 1kHz)
  ..... 280mV
- Output (Level/Impedance)
  Tape 1, 2 Rec 150mV/2.2KΩ
- Frequency Response
  Phono 1, 2 (RIAA Equalization)
  ..... 20Hz to 20kHz ±0.5dB
  Tuner, Aux, CD, Tape 1, 2 Play.... 20Hz to 80kHz ±3dB
- Tone Control
  Bass (100Hz)..... ±10dB
  Treble (10kHz)..... ±10dB
- Loudness Control (Volume Control set at −40dB Position)..... +6dB (100Hz), +4dB (10kHz)
- Subsonic Filter 15Hz (6dB/Oct)
- Muting ..... −20dB
- Hum & Noise (IHF,Short-Circuited, A Network)
  Phono 1, 2 ..... 88dB
  Tuner, Aux, CD, Tape 1, 2 Play 100dB

Miscellaneous

Power Requirements..... AC220V, 50Hz
Power Consumption..... 16W
Dimensions..... 420(W) × 88(H) × 330(D)mm
Weight (without package)..... 4.6kg

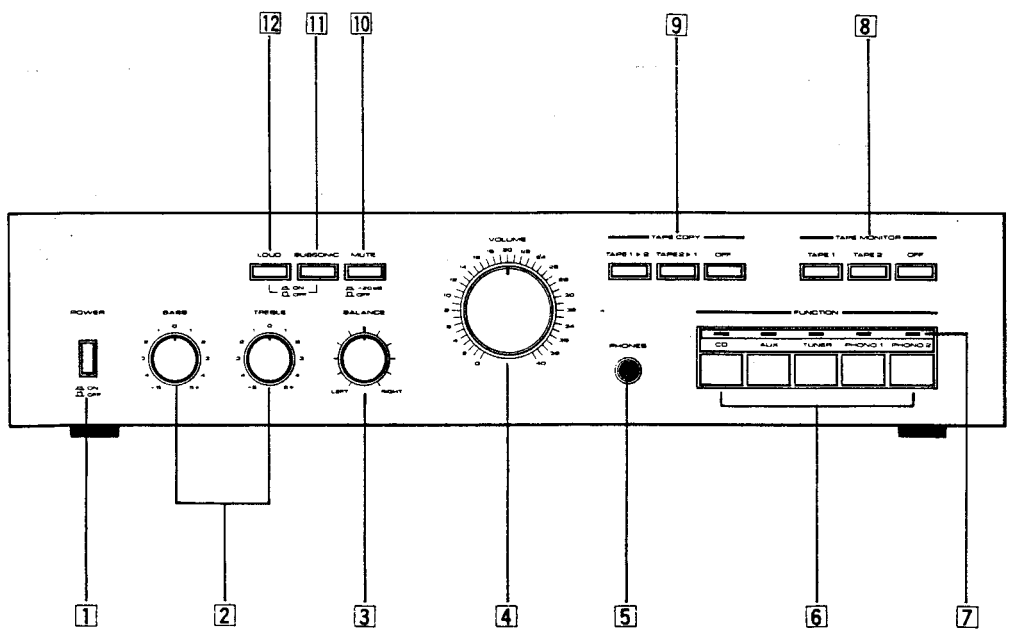
Furnished Parts

Operating Instructions 1
Connection Cord 1

Note:

- Specifications and design subject to possible modification without notice due to improvements.
- Measured pursuant to the Federal Trade Commissions Trade Regulation rule on Power Claims for Amplifier.

FRONT PANNEL FEATURES



.1 POWER SWITCH

Press to on position to turn on the pre-amplifier. Upon power up, a muting circuit presents a short delay in order to suppress the sometimes annoying sound present at switch-on.

2. BASS AND TREBLE CONTROLS

Use these controls to adjust the bass and the treble. If you turn the bass control clockwise from its center position, you will be able to emphasize the sound in the low-frequency range. Conversely, turning the bass control counter clockwise from the center position, you will attenuate the sound.

Use the treble control to adjust the sound in the high-frequency range in the same manner.

3. BALANCE CONTROL

Use this control to balance the volume of the left and right channels.

4. VOLUME CONTROL

Use this control to adjust the output level to the speakers and headphones. Turn it clock wise to increase the output level. No sound will be heard if you set it to "0".

5. HEADPHONE JACK

Plug the headphones into this jack when you want to listen through your stereo headphones.

Besure to turn down the volume level before plugging in the headphones. Turn up the volume level to a comfortable listening level once the headphones are adjusted.

6. FUNCTION SELECTOR

Use this selector to select the program source. When set, the function indicator above the panel corresponding to the position of the function selector will light up.

CD : Select when you wish to listen to a Compact Disc Player.

AUX : Select when listening to a program source which is conected to the AUX jacks.

TUNER : Select when listening to radio broadcasts from the tuner.

PHONO 1, 2: Select either Phono 1 or Phono 2 when playing a record on the corresponding turntable.

7. FUNCTION INDICATORS

The CD, AUX, TUNER, PHONO 1, 2 function indicators light up in accordance with the position of the function selector.

8. TAPE MONITOR SWITCH

Use these buttons to select the program source which is being reproduced.

TAPE 1 : Select to monitor a recording or a tape being played back on the tape deck which is connected to the TAPE 1 jacks.

TAPE 2 : Select to monitor a recording or a tape being played back on the tape deck which is connected to the TAPE 2 jacks.

OFF : Select whenever you are not playing back a tape or monitoring a recording.

9. TAPE COPY SWITCH

Use these switches when using two tape decks to copy recorded tapes or edit tapes. This switch is otherwise kept at the OFF position.

TAPE 1 ▶ 2: When playing back the tape on a deck connected to the TAPE 1 jacks and recording (copying) on a deck connected to the TAPE 2 jacks.

TAPE 2 ▶ 1: When playing back the tape on a deck connected to the TAPE 2 jacks and recording (copying) on a deck connected to the TAPE 1 jacks.

OFF: Set to this position when not copying.

10. MUTE SWITCH

Set this switch to −20dB to attenuate the audio output indicated by the volume control by 20dB.

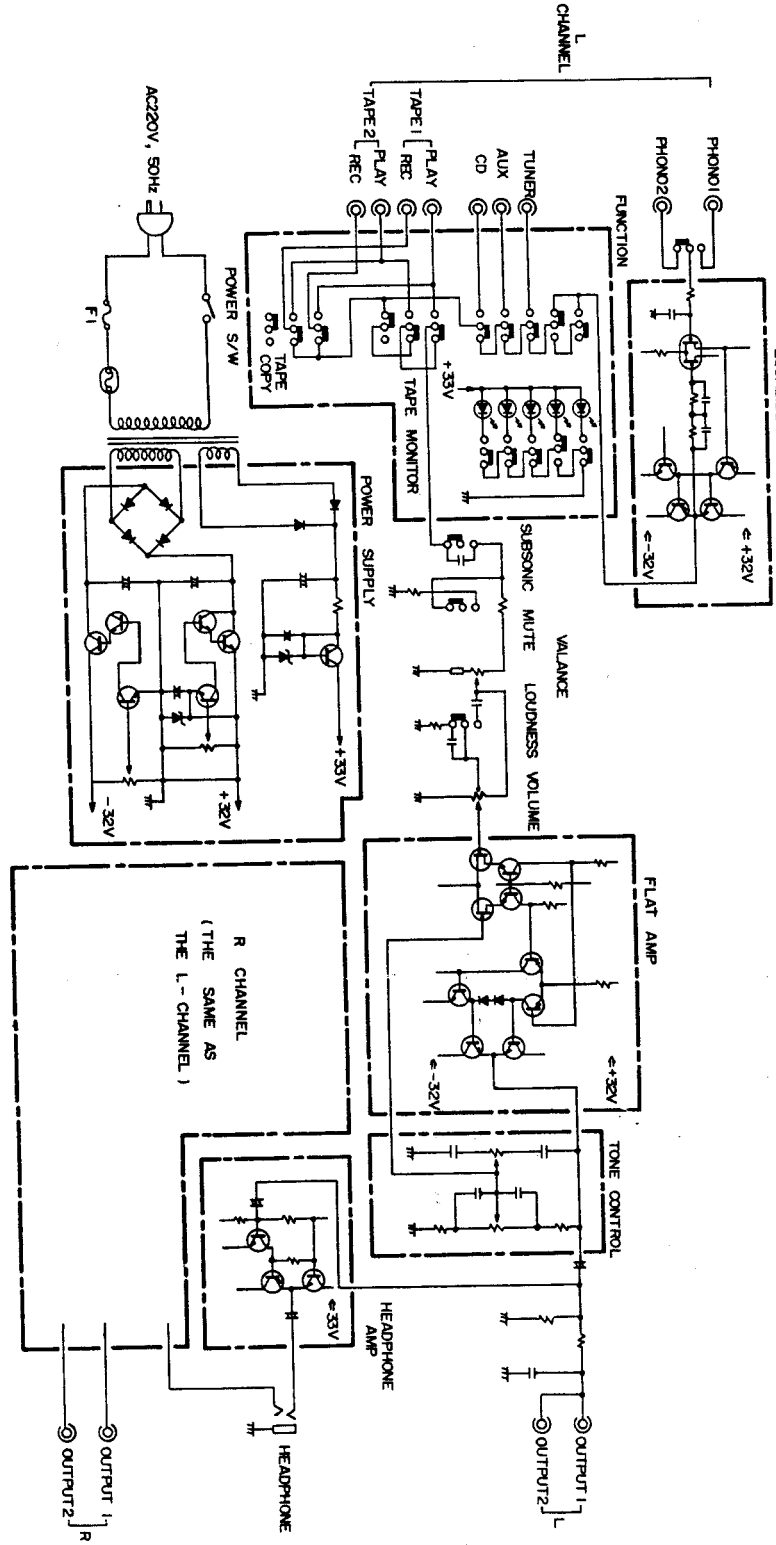
11. SUBSONIC FILTER SWITCH

When depressed, the subsonic filter (15Hz cut-off) reduces turntable rumble, record warp noise and other ultra low frequency noise.

12. LOUDNESS SWITCH

This compensates for human hearing characteristics by boosting the bass and treble response at low volume listening levels to achieve a more pleasing tone balance.

BLOCK DIAGRAM



EXPLODED VIEW PARTS LIST

Note:
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks * * and * .
  * * GENERALLY MOVES FASTER THAN *
  This classification shall be adjusted by each distributor because it depends on model number, temperature, himidity, etc.
- Patts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Parts List of Exploded View

	1. NAC-121	Volume Knob
	2. NAC-120	Rotary Knob
	3. NNB-122	Front Panel
	4. NNW-776	Push Escutcheon
	5. NNW-774	Function Knob "A"
	6. NNW-777	Power Escutcheon
	7. NNW-711	Power Knob
	8. NLA-156	Guide Nut
	9. NNA-264	Panel Stay
⚠	10. NSG-108-A	Power S/W
	11. NNA-175	Side Stay
	12. NNA-177	Canter Frame
	13. NNW-676	PCB Holder
	14. NNF-226	Trans Frame
⚠	* 15. NTT-146	Power Trans
	16. NCC-101	Rear Panel
	17. 406-000-009-009	Strain Relief Bushing
⚠	18. NDG-022	AC Power Cord
	19. NNE-035	Bonnet Case
	20. NKE-005	Ground Terminal
	21. NWM-137	Main PCB Ass'y
	22. NWM-115	Control PCB Ass'y
	23. NNW-775	Function Knob "B"
	24. NNW-1074	LED Escutcheon
	25. NND-032	Bottom Plate
	26. NNW-050	Foot

ADJUSTMENTS

DC Voltage Control

1. Adjust VR401 for 32V (to within ±0.1V) between terminal No. 3 and ground.
2. Adjust VR402 for −32V (to within ±0.1V) between terminal No. 4 and ground.

PHONO DC Balance

1. Adjust VR101 (L) for 0V (to within ±0.1V) between terminal No. 1 and ground.
2. Adjust VR102 (R) for 0V (to within ±0.1V) between terminal No. 2 and ground.

ELECTRICAL PARTS LIST

Notes:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1. When there are 2 effective digits (any digit apart from 0). such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω = 56 × 10^1 → 561 ..... RD1/4PS561J
47 kΩ = 47 × 10^3 → 473 ..... RD1/4PS473J
0.5Ω → 0R5 ..... RNZHOR5K
1Ω → 010 ..... RS1P010K

Ex. 2. When there are 3 effective digits (such as in high-precision metal film resistors).

5.62kΩ = 562 × 10^1 → 5621 ..... RN1/4SR5621K

- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ** and *.
  **GENERALLY MOVES FASTER THAN *
  This classification shall be adjusted by each distributor because it depends it depends on model number, temperature, humidity, etc.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual of they may be unavailable.

Miscellaneous Parts List P.C. BOARD ASSEMBLES

Mark	Symbol & Description	Part No.
	AF Assembly	NWM-137-0
	Control Assembly	NWM-115-0

OTHERS

Mark	Symbol & Description	Part No.
⚠	C423 Power Capacitor (0.01/400WV)	NCG-002-0
⚠	T1 Power transformer	NTT-146-A
⚠	FU1 Fuse	NEK-103-0
⚠	S201 Power Switch	NSG-026-0
⚠	AC Power Cord	NDG-022-0

AF Assembly (NWM-137-0)
SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	Q101, Q102	2SK146GR
**	R201, Q202, Q203, Q204	2SK117GR
**	Q304, Q306, Q307	KTA817A-Y
**	Q107, Q108, Q109, Q110 Q111, Q112, Q209, Q210, Q211, Q212, Q404	KTA970BL
**	Q117, Q118, Q217 Q218, Q406	KTA970GR
⚠ **	Q405	KTB834Y
**	Q305, Q308, Q309	KTC1627A-Y
**	Q103, Q104. Q105, Q106, Q113, Q114, Q205, Q206, Q207, Q208, Q213, Q214, Q401	KTC2240BL
**	Q115, Q116, Q215, Q216, Q403	KTC2250GR
**	Q301, Q302, Q303, Q310, Q311	KTC3199GR
⚠ **	Q402, Q407	KTD880GR
*	D307 Zener diode	IN959A/B
⚠ *	D405 Zener diods	IN966A/B
⚠ *	D408 Zenor diode	IN973A/B
⚠ *	D308, D401, D404, D406, D407 D101, D102, D210-D206 D306, D308, D310	IN4002 IS2473

RELAIES

Mark	Symbol & Description	Part No.
**	RL 1, RL2	NSR-014-0

CAPACITRS

Mark	Symbol & Description	Part No.
	C302	CEA010M 50L
	C307-C310	CEA100M16L
	C424	CEA100M35L
	C305, C306	CEA101M35L
	C407, C408, C419	CEA101M50L
	C405, C406, C412, C413, 4C418	CEA102M50L
	C311, C312	CEA220M16L
	C304	CEA220M50L
	C109, C110	CEA221M10L

Mark	Symbol & Description	Part No.
	C303	CEA221M25L
	C410, C420	CEA221M35L
	C301	CEA3R3M50L
	C421	CEA331M35L
	C125-C128, C 227, C 228	CEA470M50L
	C121, C122, C225, C226	CEANP4R7M25
	C107, C108	CQMA124J50
	C209, C210	CQMA152J50
	C105, C106	CQMA333J50
	C123, C124	CQMA392J50
	C119, C120	CQMA472J50
	C113, C114	CQMA473J50
	C211, C212, C213, C214	CCDSL101J50
	C103, C104	CCDSL122J50
	C101, C102, C207, C208	CCDSL221J50
	C229, C230	CCDSL331J50
	C115- C118	CCDSL470J50
	C111, C112	CCDSL560J50
	C401-C404, C409, C411, C414-C417, C422	CKDYB103K50

RESISTORS

Mark	Symbol & Description	Part No
	VR101, VR102, Semifixed Volume	NCP-034-0
⚠	VR401, VR402, Semifixed Volume	NCP-045-0
	R115, R116	RN¼PM5RIF
	R119, R120	RN¼PM47R5F
	R121, R122	RN¼PM42R2F
	R123, R124	RN¼PM1001F
	R125, R126	RN¼PM1181F
	R127, R128	RN¼PM2672F
⚠	R410	RD½PS100J
	R334, R335 R338, R339	RD½PS222J
	R117, R118	RD½PS272J
	R233, R234, R312	RD¼PM101J
	R135-R138, R332, R333	RD¼PM102J
	R105, R106, R145, R146, R265 R266, R328, R329	RD¼PM104J
	R131, R132	RD¼PM122J
	R314, R315	RD¼PM151J
	R411, R221, R222	RD¼PM152J
	R406, R407	RD¼PM202J
	R239-R242, R318-R321	RD¼PM220J
	R113, R114	RD¼PM221J
	R209, R210, R213, R214	RD¼PM222J
	R308	RD¼PM223J
	R223, R224, R303	RD¼PM224J
	R330, R331	RD¼PM242J
	R129, R130	RD¼PM243J
	R225, R226	RD¼PM273J
	R107, R108	RD¼PM303J
	R109-R112, R201-R208 R211, R212, R243, R244	RD¼PM331J
	R263, R264	RD¼PM332J
	R304, R340	RD¼PM333J
	R405	RD¼PM362J
	R322, R323	RD¼PM391J
	R311, R409	RD¼PM392J
	R408	RD¼PM432J
⚠	R403, R404	RD¼PM433J
	R305	RD¼PM434J
	R139-R142, R249-R252	RD¼PM470J
	R147, R148	RD¼PM471J
	R237, R238, R309	RD¼PM472J
	R101, R102, R307	RD¼PM473J
	R143, R144	RD¼PM560J
	R313, R336, R337	RD¼PM563J
	R227, R228, R231, R232, R306 R310	RD¼PM622J
	R133, R134	RD¼PM681J
⚠	R401, R402	RD¼PM752J
	R103, R104	RD¼PM820J
	R245-R248	RD¼PM821J
	R235, R236	RD¼PM822J
	R229, R230	RD¼PM823J
	R302	RD¼PM911J

OTHERS

Mark	Symbol & Description	Part No.
	4P pin jack (OUTPUT)	NKB-003-0
	6P pin jack(PHONO 1, 2 TUNER, AUX, CD, TAPE 1, 2)	NKB-004-0
	JH, Terminal 3P	NKP-028-0
	JC, JE, JF, Terminal 7P	NKP-032-0
	JA, Terminal 8P	NKP-033-0
	JB, JD, Terminal 9P	NKP-034-0
	Jack (PHONE)	NKN-026-0
	Fuse holder	AKR-035-0
	Heat sink	ANH-575-A
	Screw	VBZ30P080FMC
**	P.C.B.	NNP-290-A

Control Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
**	D310 Zener diode	In967A/B
**	D301-D305 LED	KLR114E

SWITCH

Mark	Symbol & Description	Part No.
**	S1 Push Switch	NSG-082-0
**	S2, S3 Push Switch	NSG-083-0
**	S4 Push Switch	NSG-084-0

RESISTORS

Mark	Symbol & Description	Part No.
**	VR1, Rotary Volume	NCS-072-0
**	VR2, Rotary Volume	NSC-073-0
**	VR3, VR4, Rotary Volume	NCS-074-0
	R257, R258	RD¼PM105J
	R253, R254	RD¼PM222J
	R259, R260	RD¼PM223J
	R261, R262	RD¼PM392J
	R215, R216	RD¼PM473J
	R219, R220	RD¼PM512J
	R217, R218	RD¼PM562J
	R255, R256	RD¼PM821J

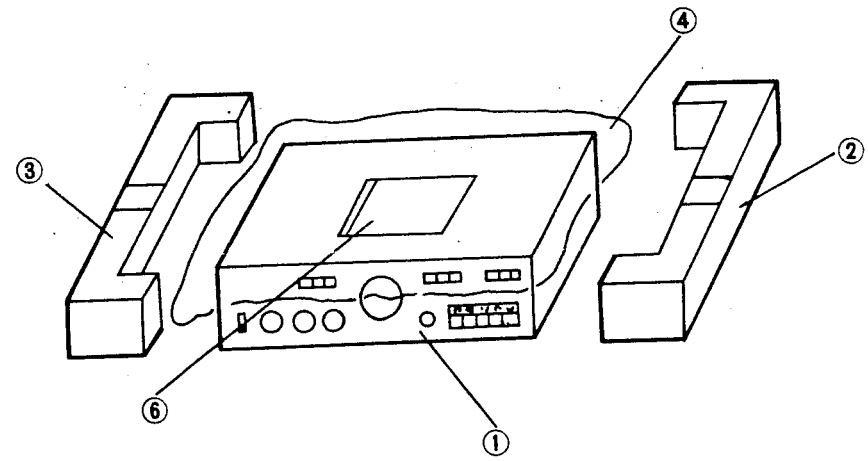
CAPACITOR

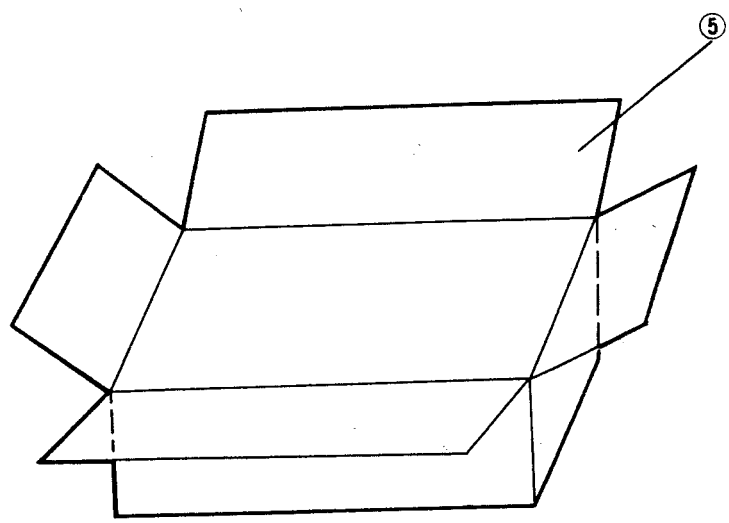
Mark	Symbol & Description	Part No.
	C223, C224	CEANP100M16
	C205, C206	CQMA124J50
	C219, C220	CQMA153J50
	C217, C218	CQMA183J50
	C201, C202	CQMA224J50
	C215, C216	CQMA332J50
	C221, C222	CQMA823K50
	C203, C204	CCDSL361J50

OTHERS

Mark	Symbol & Description	Part No.
**	P.C.B.	NNP-291-A
	LED HOLDER	NNW-773-B

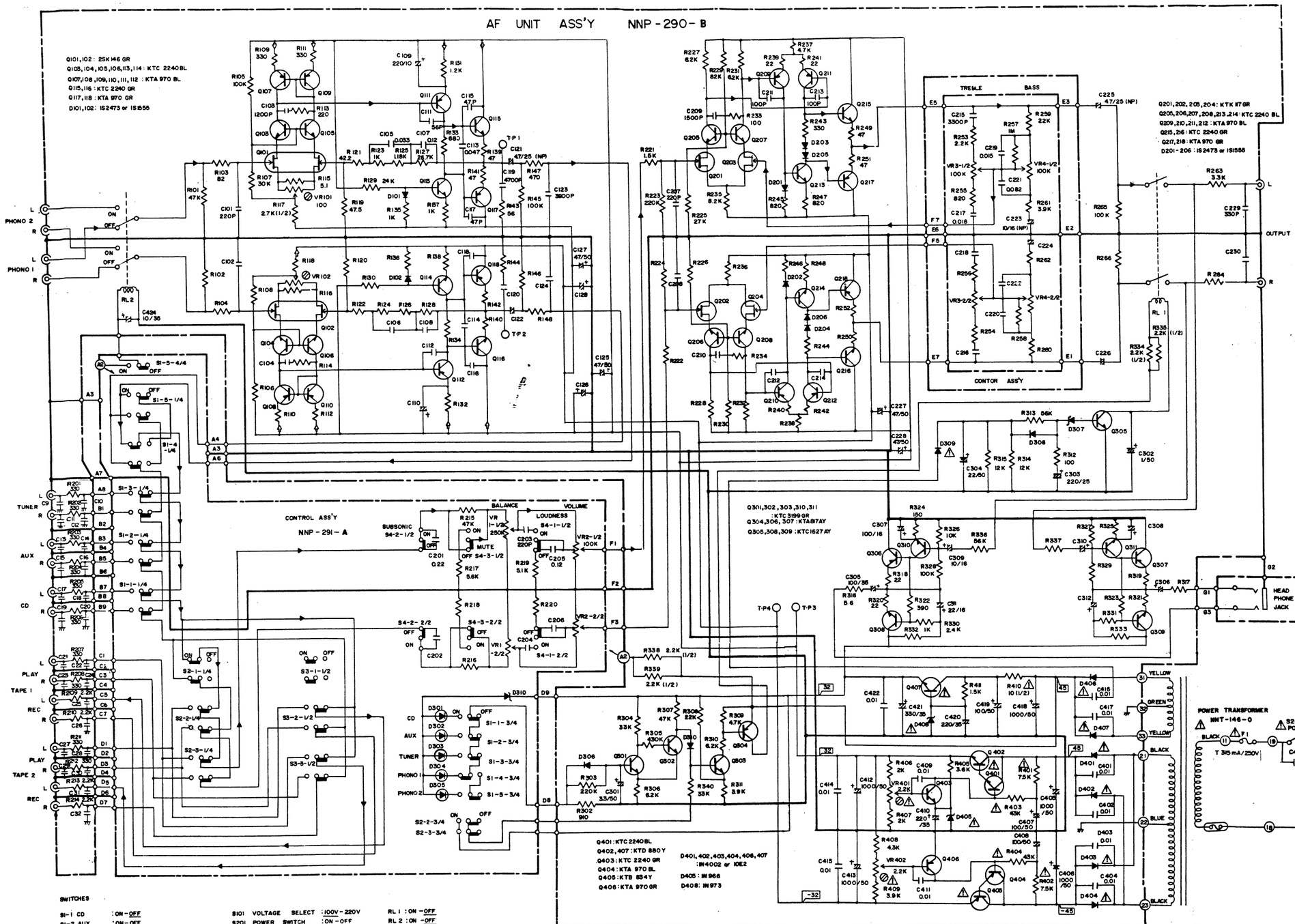
PACKING



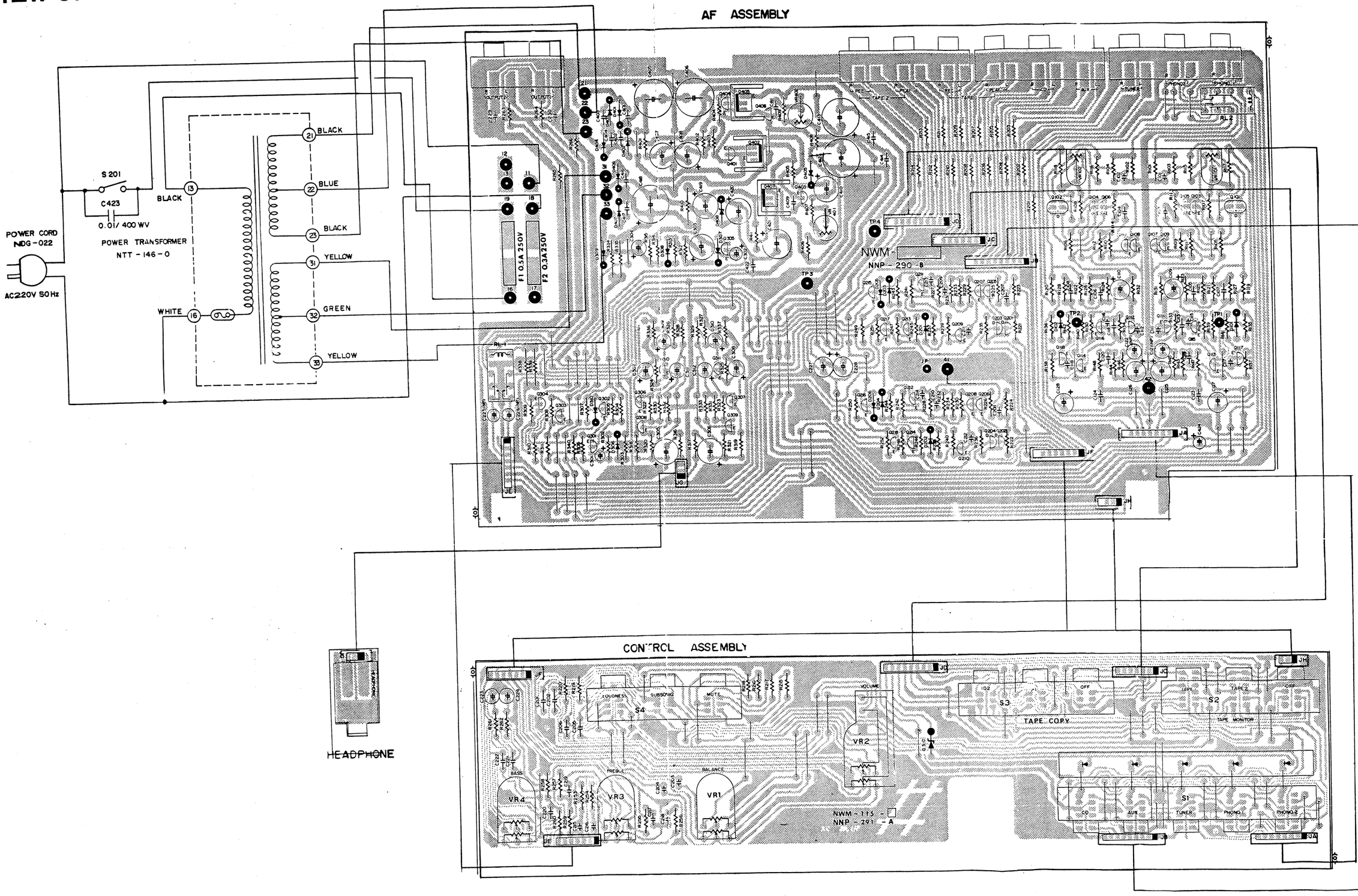


Mark	No.	Part No.	Description
	1		Set
	2	NHA-198-0	Side pad (L)
	3	NHA-198-0	Side pad (R)
	4	NHL-007-0	Poly Sheet
	5	NHG-275-0	Paking Case
	6	NRA-207-0	Instruction Manual

SCHEMATIC DIAGRAM


AF UNIT ASS'Y NNP-290-B
CONTROL ASS'Y NNP-291-A
CONTOR ASS'Y
TREBLE
BASS
BALANCE
VOLUME
LOUDNESS
SUBSONIC
MUTE
PHONO 2
PHONO 1
TUNER
AUX
CD
PLAY TAPE 1 REC
PLAY TAPE 2 REC
OUTPUT
HEAD PHONE JACK
POWER TRANSFORMER
PWT-146-0
S201 POWER SWITCH
AC POWER CORD
MDG-082
AC220V/50Hz
Q101,102 : 2SK146 GR
Q103,104,105,106,113,114 : KTC 2240BL
Q107,108,109,110,111,112 : KTA 970 BL
Q115,116 : KTC 2240 GR
Q117,118 : KTA 970 GR
D101,102: 1S2473 or 1S1555
Q201,202,203,204: KTK 87 GR
Q205,206,207,208,213,214: KTC 2240 BL
Q209,210,211,212 : KTA 970 BL
Q215,216: KTC 2240 GR
Q217,218: KTA 970 GR
D201~206 : 1S2473 or 1S1555
Q301,302,303,310,311 : KTC 3199 GR
Q304,306,307 : KTA 987 AY
Q305,308,309 : KTC 1627 AY
Q401: KTC 2240BL
Q402,407: KTD 880Y
Q403: KTC 2240 GR
Q404: KTA 970 BL
Q405: KTB 534Y
Q406: KTA 970 GR
D401,402,403,404,406,407 : 1N4002 or 10E2
D405 : 1N 966
D408: 1N 973
D301,302,303,304,305 : KLR 114 E
D306,308 : 1S2473 or 1S1555
D307 : 1N 959
D309 : 1N 4002 or 10E2
D310 : 1N 967
SWITCHES
S1-1 CD : ON-OFF
S1-2 AUX : ON-OFF
S1-3 TUNER : ON-OFF
S1-4 PHONO 1 : ON-OFF
S1-5 PHONO 2 : ON-OFF
S2-1 TAPE MONITER OFF : ON-OFF
S2-2 TAPE 2 : ON-OFF
S2-3 TAPE 1 : ON-OFF
S3-1 TAPE COPY : ON-OFF
S3-2 2▶1 : ON-OFF
S3-3 1◀2 : ON-OFF
S101 VOLTAGE SELECT : 100V-220V
S201 POWER SWITCH : ON-OFF
S4-1 LOUDNESS : ON-OFF
S4-2 SUBSONIC : ON-OFF
S4-3 MUTE : ON-OFF
RL 1 : ON-OFF
RL 2 : ON-OFF
THE UNDERLIEND INDECATES THE SWITCH POSITION
1. RESISTORS
INDICATED IN Ω, 1/4W, ±5% TOLERANCE UNLESS OTHERWISE NOTED K : KΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% TOLERANCE.
2. CAPACITORS
INDICATED IN CAPACITY (μF) / VOLTAGE (V) UNLESS OTHERWISE NOTED P : pF
INDICATION WITHOUT VOLTAGE IS 50V EXCEPT ELECTROLYTIC CAPACITOR.
3. VOLTAGE CURRENT
□ : DC VOLTAGE (V) AT NO INPUT SIGNAL
VALUE IN ( ) IS DC VOLTAGE AT RATED POWER.
4. OTHERS
➡ : SIGNAL ROUTE
⊘ : ADJUSTING POINT
THE ⚠ MARK FOUND ON SOME COMPONENT PARTS INDICATES THE IMPORTANCE OF THE SAFETY FACTOR OF THE PART. THEREFORE, WHEN REPLACING BE SURE TO USE PARTS OF IDENTICAL DESIGNATION.

TOP VIEW OF P.C. BOARDS POINT-TO-POINT WIRING DIAGRAM



EXPLODED VIEW